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Passing the Torch
Mentoring the Next Generation

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Catharine Parker, Fred Holland, and Denise Sanger (left to right) represent a generational lineage in scientific research at the S.C. Department of Natural Resources.

PHOTO/GRACE BEAHM ALFORD



*Coastal Science
Serving South Carolina*

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FAMILY BUSINESS. *Jake Massey takes a break from shoveling oysters into a cleaning chute to talk with his father, Jeff Massey, and his grandfather, Bill Livingston. Mentoring can come naturally when there's a familial bond.*
PHOTO/GRACE BEAHM ALFORD

Passing the Torch *Mentoring the Next Generation*

by Joey Holleman

Fred Holland wanted to help others avoid the shock he endured during his own sudden ascension to a leadership role. Emory Campbell felt the call to ensure the future of a culture through which he had learned so much. Sue Morrison was simply doing what she loves to do. Bill Livingston kept it in the family.

They didn't consider it mentoring. But South Carolina is lucky to have enthusiastic leaders like Holland, Campbell, Morrison, and Livingston, who have passed on knowledge and passion to succeeding generations in the fields of science, cultural heritage, classroom education, and business.

That generational handoff of knowledge is especially important

now because:

- The percent of scientists and engineers in the United States workforce age 51 to 75 increased from 19.9 in 1993 to 34.2 in 2015, and is still on the rise, according to the National Science Foundation.
- The average age of 1,478 commercial saltwater fishing license applicants in South Carolina in 2017 was 49.78, according to S.C. Department of Natural Resources.
- In the past five years, 5,571 South Carolina public school K-12 teachers have retired, according to the S.C. Center for Educator Recruitment, Retention, and Advancement.
- The cultural heritage warriors

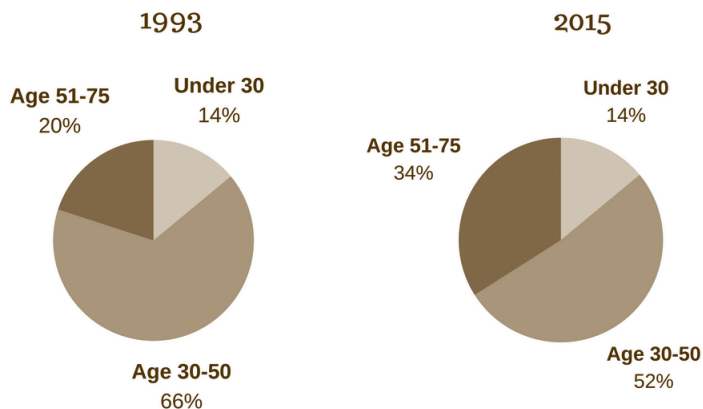
forged in the Civil Rights era are slowing down after years of struggle for progress in their communities.

A 2011 Pew Research study estimated 10,000 Baby Boomers will hit age 65 every day through 2030. In South Carolina, the portion of the state's population age 65 or older increased from 11.4 percent in 1990 to 16.7 percent in 2016, according to the U.S. Census Bureau.

As those older people leave the workforce, every employment sector faces the challenge of making sure the following generations are equipped to take over.

"Inevitably today, employees leave without passing on enough of this valuable expertise," writes David W.

Age Distribution of Scientists and Engineers in the United States Labor Force



Source: National Science Foundation.

DeLong in *Lost Knowledge: Confronting the Threat of an Aging Workforce*. “And, often, the only way their successors discover that they are missing key insights that their predecessors had is through mistakes, unexpected quality problems, or other costly disruptions in performance.”

But the losses are reduced when institutional knowledge flows freely from one generation to the next. It’s a dance that works best with willing partners, both mentors and protégés. That’s common in scientific research, cultural heritage, and classroom education. In the physically and economically challenging field of commercial fisheries, however, aging leaders have to search for, and often struggle to find, someone willing to follow them in the jobs.

In many workplaces, Baby Boomers reaching the end of their careers creates challenges. Responding to those challenges by increasing focus on mentoring formalizes what happens naturally in the best workplaces with passionate leaders.

IN SCIENCES, “MENTORING IS INHERENT”

The professor-student paradigm gives science and research a distinct advantage over most fields when it

comes to the generational transfer of job skills. Their relationship is built on communication and feedback.

“I don’t think the term ‘mentoring’ was used when I was coming up, and it really doesn’t need to be,” says John Vernberg, who came to the University of South Carolina (USC) in 1969 to start what is now the Belle W. Baruch Institute for Marine and Coastal Science. “In the university setting, mentoring is inherent. It’s just part of the job.”

Vernberg was one of the best at that job, according to Fred Holland, an early graduate student of his at USC. Holland completed undergraduate work at The Citadel and then spent 5½ years in the military before Vernberg lured him into marine science. Vernberg tasked Holland with some of the on-the-ground aspects of starting the Belle W. Baruch Institute, instilling the value of putting trust in students.

After graduate school, Holland left academia for a job with Martin-Marietta. His new supervisor was a brilliant man named Tibor Polgar. When Polgar died of a heart attack at age 41 in 1985, Holland was the next guy in line for the job. “That was a baptism by fire,” Holland says. “I had learned a lot of science from Polgar, but he lacked in life skills.”

Holland’s career eventually brought him to South Carolina to work for the S.C. Department of Natural Resources (SCDNR) in 1991 and then for the new Hollings Marine Laboratory in 2001. At both stops, he made sure people working under him were prepared for their next steps.

“We needed more generalists, people who understand how the parts fit together and how to get things done,” Holland says. “I’m a big fan of group think. Let’s get everybody involved with an issue around a table and talk it out. And there are no bad questions. I became known as ‘Mr. So What.’”

As one of Holland’s graduate students in the 1990s, Denise Sanger participated in many of those meetings.

“We would talk through projects, and discussions got quite animated,” Sanger says. “One of the marine scientists said, ‘Wow! Fred was giving you a hard time.’ I never thought of it that way. We were discussing, not arguing. He would play devil’s advocate and make you defend your opinion.”

Sanger is now manager of the SCDNR Marine Resources Research Institute’s Environmental Research Section, and she continues the Holland legacy. With the overwhelming pace of technological advances, Holland’s methods are both more difficult and more crucial.

“As a society, things have changed,” Sanger says. “We don’t always have the time to step back and think. I’m trying this year to get back to those collective discussions.”

Catharine Parker thinks Sanger is performing the mentor role just fine. A College of Charleston graduate student, Parker is doing her master’s research under Sanger. Every two weeks, all staff and graduate students working with Sanger get together for a group meeting to discuss their projects, a strategy straight out of Holland’s playbook.

“You just jump into the research,” Parker says. “But there’s always

someone there to help you. As questions come up, I can go sit down and talk with (Sanger) about what it means.”

Soon, Parker will have the foundation to start the mentoring cycle all over again. That’s the beauty of the protégé-mentor cycle in the research and higher-education fields.

But even in sectors with a built-in mentoring advantage, the high volume of retirements these days can create challenges. At USC’s Belle W. Baruch Institute, for instance, Jay Pinckney, who took over as director in 2017, will have to replace four senior-level faculty and staff retiring in June 2018. That’s more than 100 years of experience leaving at once.

“There’s a big loss of institutional knowledge,” Pinckney says. “They have a good understanding of how things work, both in nature and in the state government system. They’ve seen it all, and it really takes you several years to build that knowledge back up.”

Pinckney has encouraged younger employees to spend more time with these experienced co-workers, and he has asked the veterans to give more responsibilities to younger staff. Pinckney looks forward to the excited energy new staffers will pump into the workplace, but he also knows they won’t be able to fill certain voids for a long time.

SOMETIMES, MENTORS NEED TO SEEK PROTÉGÉS

Early in his time at SCDNR in the 1990s, Fred Holland recognized the agency needed veterinary input in its mariculture program. Holland’s brother sold supplies to veterinarians, and he introduced Holland to Al Segars, who had a practice in Hartsville, S.C.

Over the course of a couple of years, their conversations led to Segars’ mid-career shift. By the time Segars retired as stewardship coordinator for the Ashepoo, Combahee, and Edisto (ACE) Basin National Estuarine Research Reserve at the end of 2017, he had become a critical force for

strengthening the connection between the people and the environment of coastal South Carolina.

Back when he changed career course, Segars had broad knowledge of wildlife, but he knew enough to seek out expertise. “I found there were lots of people in specialties in wildlife management, and you could tap into their brains,” Segars says. “Bill Roumillat in fisheries, Tom Murphy

with eagles, Dave Owens with sea turtles – they were all excellent teachers. It’s a constant learning process, and so many in this field are kind in sharing their knowledge.”

Segars played that contribution forward. For more than a decade of summers, he ventured out with veterinary school students on an education vessel to monitor the health of sea turtles. Segars stressed the importance



NATURAL LINEAGE. Fred Holland (back) used “group think” meetings on marsh ecology research with graduate students such as Denise Sanger (second in line), who now does the same with new graduate students like Catharine Parker (front).

PHOTO/GRACE BEAHM ALFORD

of using data they collected on turtle injuries and mortality to convince the public to be better stewards of the environment. He shared similar messages with students who come to the SCDNR facility at Bennett's Point.

"The key is to get them out in the mud, take them on outings," he says. "Most young biologists these days didn't grow up in the woods hunting and fishing like they did 50 years ago."

When he realized his career was winding down, Segars sought out and found a protégé in Nick Wallover, who was working in the SCDNR coastal bird program at Santee Coastal Reserve. Wallover joined Segars in the ACE Basin office four years ago.

"There never was a feeling like I was being mentored, but I caught on

eventually," Wallover says. "He let me go to national meetings for the National Estuarine Research Reserves instead of him. When it came to the vision for the land we manage, he asked me what I thought.

"Mainly I learned by watching him do his job. So much of what we do is about connections and partnerships. When we would go out to community stakeholder meetings to talk about how to be the best managers of the resource, he was so persuasive and so charismatic."

Working in a state agency with a competitive hiring process, Wallover had no assurance he would be selected to succeed Segars as stewardship coordinator. Wallover's experience working beside Segars, however, gave

him a tremendous edge, and he got the job.

"People tell me all the time that I have some big shoes to fill," Wallover says. At least he was able to stride beside his predecessor for a few years to understand the nuances of the path. That's the ideal.

IN TEACHING, NETWORKING PAVES THE WAY

Early in her teaching career at James Island Charter High School, Sue Morrison worked alongside veteran teachers who helped her devise lesson plans and set up labs for her biology classes. When it came to marine science classes, however, there were fewer established resources at the school.



ONE-ON-ONE LEARNING. Nick Wallover (left) had the advantage of spending four years learning alongside Al Segars (right), S.C. Department of Natural Resources stewardship coordinator, in a small office and expansive natural area in the ACE Basin.
PHOTO/GRACE BEAHM ALFORD



HELPING HANDS. Retired teacher Sue Morrison (right) not only mentored her successors, she also has been willing to come back to explain complicated lab set-ups to younger teachers such as Jody Evans (left).

PHOTO/JOEY HOLLEMAN/S.C. SEA GRANT CONSORTIUM

She soon discovered how important networking is. The South Carolina Marine Educators Association gathers like-minded professionals who enthusiastically shared information. Also, much-needed information and methodology can be found in Leslie Sautter's COASTeam program at the College of Charleston and the *Sea Sampler* series of lesson plans put together by Wendy Allen at USC's Belle W. Baruch Institute and supported by the S.C. Sea Grant Consortium.

Networking on a smaller scale evolved closer to the classroom. Morrison, who retired four years ago after 32 years in the classroom, loved teaching at a school where science teachers worked together to pull each other up.

"As new people came into the department, we all took them under our wing," Morrison says. "There would be a gradual shift of knowledge from one generation to the other. And it wasn't all one way. We learned so

much from the younger ones. They've just been through training in school and know so much. It's fun to learn from them."

Those on the other end of the process say Morrison is being too modest. Meghan Ward worked beside Morrison at James Island Charter High School and now teaches science at Ashley Hall in Charleston. She often uses teaching techniques gleaned from Morrison.

"She has such creative ways of presenting material," Ward says. "She has a gift for teaching. And no matter what she was doing, she had the time to sit down and show you how to do your job better. It wasn't like she was trying to be a mentor. That's just what she did."

At James Island Charter High School, science teachers now get together weekly in what's called Planning Learning Communities, which focus on coordination of lesson plans. Those meetings also serve as networking opportunities. Still, Jody

Evans, in her fourth year teaching at the school, finds herself often returning to lesson plans left behind by Morrison and Michelle Lee, who now teaches at Trident Technical College.

"They left me all their files, all their activities," Evans says. She shivers to think how she would have managed without those files and the assistance of her predecessors. "There would have been a lot more tears," she says.

And such is the bond among marine-science teachers that Evans never hesitates to ask Morrison for help. "This year, I found a lab plan of hers that I didn't understand how to organize," Evans says. "She came in after school and showed me how to do it."

DEEP ROOTS MINED IN CULTURAL HERITAGE

The flow of knowledge from generation to generation is fundamentally different in the cultural heritage field. The process often features a teller

of allegorical stories who melds the role of teacher, mentor, and community elder. The Japanese term is *sensei*. Or in pop culture, it's Yoda from *Star Wars*.

Emory Campbell, who worked for a decade in public health before taking over as director of the Penn Center on Saint Helena Island in 1980, has filled that role for years in the field of Gullah cultural heritage. His style harkens back to his childhood on Hilton Head Island.

"We didn't have video or television, so I had to listen to stories, and those stories were instructional," Campbell says. "My Uncle Johnny, boy he could pour out those stories, those lessons. I didn't sit and listen to those stories because they could help me later in my life, but later on they became instructive in my work."

When his career arc took him to Penn Center, an educational and

cultural hub of the African-American community in Beaufort County, Campbell learned from Leroy Browne, the center's longtime supervisor of buildings and grounds. Some lessons were direct, just the basics of doing the job. Others were more subtle, like the danger of discarding the past when working toward a new future.

"I remember I had an old roller-top desk, and I wanted a brand new desk," Campbell says. "Mr. Browne gave me a history lesson about that desk, how it had been in the office for generations and it wasn't just an old piece of furniture. And that desk was still there when I left Penn Center."

Campbell held weekly staff meetings where it became clear to him which employees wanted mentoring. "Certain people, you give advice to them because you know they'll accept it," he says. "If somebody respects and admires you, the mentoring is

more effective."

That's true even more so for a protégé outside of the work environment, and that's where Campbell truly served the *sensei* role. For instance, Michael Allen, who recently retired from the U.S. National Park Service (NPS) after 37½ years, says he looked to Campbell for big-picture guidance.

"He consistently said to me, 'People are placed in locations and positions for specific reasons. When you realize why you are placed there, then you can do that job,'" Allen recalls. "I took that to heart."

A history buff, Allen liked his job as an interpretive ranger at Charles Pinckney National Historic Site in Mount Pleasant, but he wondered about his life purpose. Then in 1999, he attended an NPS conference on slavery where Campbell started the conversation about the need for recognition of the unique Gullah/Geechee



ROLE MODEL. As director of Penn Center in Beaufort County, Emory Campbell (center) inspired Michael Allen (right) and Victoria Smalls (left) at various stages of their careers in the cultural heritage field.

PHOTO/GRACE BEAHM ALFORD

culture carved out by African-Americans along the Southeast coast.

Allen had found his niche. He helped compile NPS research that contributed to establishment of the Gullah/Geechee Cultural Heritage Corridor in 2006. That work led him to much the same role in a study of the Reconstruction period, which culminated in President Obama's declaration of a Reconstruction Era National Monument in Beaufort County in early 2017.

Throughout his career, Allen passed on his experience both as a recruiter and adviser for other African-Americans in the NPS and in the cultural heritage field in general. He acknowledged teaching about cultural heritage in the South can be difficult. He shows young people a photograph of him portraying a house slave in a historical re-enactment of Confederate President Jefferson Davis' visit to the Aiken-Rhett House in Charleston. "I depicted a servant, but I didn't see it so much as condescending as portraying history," he says.

Campbell's cultural heritage lineage also includes Victoria Smalls, who recently was named program manager for the nascent International African American Museum in Charleston. A Saint Helena Island native, Smalls grew up enveloped in Gullah culture without recognizing it. Her father cultivated a 20-acre farm plot and went to the river every Saturday to harvest whatever the salt marsh had to offer.

Not long after starting classes at South Carolina State University, Smalls noticed a photograph of a familiar man behind a plow in an exhibit at the school's I.P. Stanback Museum. "Oh my God, that's my father!" she thought. Only years later did Victoria realize that moment had pointed her to a career shining a light on the intricacies of African-American culture in South Carolina. The spark was rekindled when she started working at Red Piano Too Art Gallery on Saint Helena Island for gallery owner Mary Inabinett Mack.

Family Connections Rule in Cultural Arts

For the Gullah/Geechee people who were enslaved and shipped to the Southeast coast, cultural heritage includes language, food, lifestyle, and art. All of those have been passed down for generations, too.

It's not exactly mentoring. In fact, the Gullah/Geechee language doesn't have one word that could be translated as mentor or mentoring.

"Knowledge is passed in more of a circular manner, inter-generationally, all of our lives," says Queen Quet, chieftess of the Gullah/Geechee Nation. "So we do not have a word to compartmentalize that which we live."

Cultural skills, such as sweetgrass basket-making, for years almost exclusively were passed down through family connections. Once made for household use, sweetgrass baskets these days are treated like works of art. Jeannette Lee's aunt taught her basic stitches to sew baskets when she was a child in Mount Pleasant. She started with bottoms, the easiest part of the basket to sew, and worked up to more intricate steps.

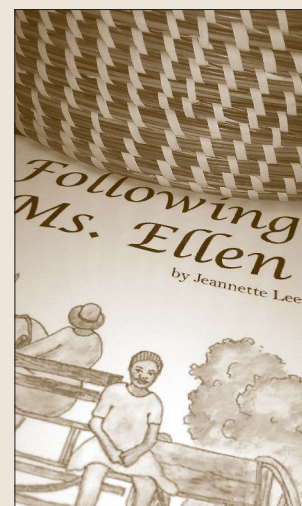
"There was this great big oak tree, and in the summertime, she would teach her young relatives how to do it under the tree," Lee says.

The craft is becoming more mainstream, with plenty of people outside of the Gullah community learning the skills these days. But Lee says she can tell the difference in a basket made by someone taught in a class and one sewn by someone who learned at the knee of a patient relative. The love, the pride, and the history show through.

Now retired from her career in banking, Lee has more time to sew baskets, though weaving motions put a strain on her old joints. Still, she enjoys learning new styles – sweetgrass is being incorporated into jewelry and lamps now – from some of the cousins she once taught.

Lee's first basket-making protégé in the family was Markita Williams.

"We basically lived in her front



CULTURAL ROOTS. Jeannette Lee passes on her heritage not only by teaching the skill of sewing sweetgrass baskets but also in a children's book focused on the community bonds central to Gullah culture.

PHOTO/JOEY HOLLEMAN/S.C. SEA GRANT CONSORTIUM

yard, and she would call me back to her house," says Williams, who now has teenage children of her own. "It almost wasn't an option. It was like this is what has been passed down in the family, and I'm going to teach you so it won't be a lost art."

If that makes it sound forced, the words are giving the wrong impression. The process grew from a loving family bond.

"Looking back now, I'm really appreciative of her teaching me the craft when I would have rather been playing Nintendo," Williams says. "It was an honor. She had no children of her own, and I was the person she invested her time in."

College, life, and career took Williams away from basket-making for a few years. Passing the craft on to her own children re-ignited her interest, and she finds time to sew a couple of baskets a year now. She usually gives those to friends, but she has hung onto the first two she made under the tutelage of her cousin. Those are hung on the wall in her house. ♡

"I was attracted to seeing my culture represented in the images in the gallery," says Smalls, who also is a visual artist. "My life was all wrapped up in Gullah, and she helped me see that."

Mack was the first of her mentors in the field. While at the art gallery, Smalls attended Gullah Studies Institute classes offered at Penn Center. There she renewed her acquaintance with Campbell, whom she had known since childhood. He soon became her second mentor.

"Did I officially ask them to mentor me? No," Smalls says. "It was just understood."

Mack pushed her out of the nest at Red Piano Too Art Gallery, encouraging her to follow her passion for Gullah cultural studies. She ended up at Penn Center, first as a volunteer and eventually as director of development and marketing. In that role, she once introduced Campbell at a gathering as Dr. Campbell.

"He pulled me aside and told me: 'You don't need to call me Doctor. It's

just an honorary degree,'" she recalls. As Campbell continued talking, Smalls realized the point of the conversation was to encourage her to keep studying as much as she could, to explore all sides of the cultural story, and maybe earn a doctorate of her own someday.

"To this day, any time I call him for help, he always says yes," Smalls says.

And if Campbell doesn't have the answer to her questions, she turns to a mentor a little closer to her age: Michael Allen. She refers to him as the walking encyclopedia on cultural history. Mack and Campbell helped her make life-course decisions. Allen's mentoring has been more specifically on the professional level. "I wouldn't be who I am today without all three of them," she says.

Smalls admits she has done little mentoring of her own, other than providing a strong cultural foundation for her children, ages 25 and 12. She recognizes, however, it's time for her to help others coming up in the field. "I accept that responsibility," she says.

Campbell says the Gullah community is fortunate to have advocates such as Allen and Smalls, who have turned their personal experiences into professional roles interpreting their culture. "I'm proud that I got to inspire people like Michael Allen and Victoria Smalls," he says.

SEAFOOD BUSINESS CHALLENGES STYMIE MENTORING

In business, large corporations often infuse mentoring programs into their business plan, with executives plucking the best employees as protégés and spending extra time with them. But a company with a dozen or fewer employees seldom has that luxury. Throw in a physically and emotionally demanding profession with slim profit margin and a fickle income source, and you get the challenges of the commercial fishing business.

The generational handoff of



TOUGH SITUATION. Rutledge Leland has managed McClellanville's Carolina Seafood since 1971. Leland hasn't been able to find anyone eager to learn the intricacies of the business and take over his increasingly difficult job.

PHOTO/JOEY HOLLEMAN/S.C. SEA GRANT CONSORTIUM

experience is a problem throughout the industry, from captaining a boat to processing the catch. The two wholesale seafood businesses in the small Charleston County community of McClellanville provide classic examples.

Like a lot of young men in McClellanville back in the day, Rutledge Leland worked the docks as a teen. After a stint in the military, he returned home in 1971. Almost immediately, his father turned over the family business, Carolina Seafood, to him.

"There was no mentoring, but it was easy back then," Leland says. "People bought everything you had right at the dock."

Trucks pulled up before sunrise, waiting to be loaded with shrimp or whatever boats brought in. In the past

two decades, however, the explosion of imported seafood, closing of most local processing plants, and rising costs of transportation have changed the business model. These days, Leland finds himself making calls to local and regional restaurants and seafood markets to hawk the haul when a boat unexpectedly arrives with 10,000 pounds of shrimp.

Leland works 12-hour days, six days a week. "Handling seafood is not a lot of fun," Leland says. "But in the morning, when I watch the sun coming up over the creek, I enjoy it."

Financially, Leland would be better off selling his family's land on Jeremy Creek to a developer. But the seafood harvest is the heart and soul of McClellanville, and Leland, mayor of the town since 1976, couldn't bear to see the industry go away.

His two children have no interest in taking over the business, and Leland has no other protégé in the wings. "It's my fault," he says. "I've done it all myself for so long, and I don't know how to delegate."

In recent years, Leland has broached the concept of boat captains forming a co-op to take over the operation. The S.C. Sea Grant Consortium, East Cooper Land Trust, and Town of McClellanville have been awarded a Hometown Economic Development grant from the S.C. Municipal Association to study co-op alternatives. At a meeting in early 2018 that drew about 20 stakeholders, several boat captains wondered if a co-op would work without someone like Leland involved.

"We've always been spoiled," one of the captains said. "If the shrimp are



DIFFICULT DECISION. Jake Massey (right) plans to consider a U.S. Coast Guard career before deciding whether to follow in the footsteps of his father, Jeff Massey, and grandfather, Bill Livingston, in commercial fishing.

PHOTO/GRACE BEAHM ALFORD

Baby Boomer Effects



5,571

Number of public school teachers in South Carolina who retired, 2012-2016.

49.78

Average age of applicants for saltwater commercial fishing licenses in South Carolina, 2017.



Sources: S.C. Center for Educator Recruitment, Retention, and Advancement; S.C. Department of Natural Resources.

out there, we go out and catch 'em and come back and unload 'em and go home. It's not going to stay that way unless we find some way to make Rut 20 years old again."

The opposite is more likely. Last year, Leland underwent quintuple heart bypass surgery. The staff at Carolina Seafood managed the day-to-day business while he was out, but "long-term things didn't get done," Leland says.

Around the next bend on Jeremy Creek, Bulls Bay Seafood owners Bill and Kathy Livingston are fortunate. Bill Livingston learned the fishing and business side from his father, who ran a fish camp in Moncks Corner. The Livingstons took over Bulls Bay Seafood in 1991. By then, "older people already had started discouraging their sons and daughters from getting into the business because there are better ways to make a living," Livingston says.

Bucking the trend, the Livingston's son-in-law, Jeff Massey, tired of another job outside the seafood business in 1998 and joined them in McClellanville. Equipped with a financial management degree from Clemson University, he originally just did the books and stayed home with his young son. Slowly, he took over more of the business responsibilities.

Like Carolina Seafood, Bulls Bay

Seafood handles shrimp, fish, crabs, and oysters. Bulls Bay also manages a clam mariculture operation and a shedding barn for the short soft-shell crab season in early spring. The clam business was Massey's true entree into the profession, and he jokes that the learning process "about mentored me to death."

Actually, he and his father-in-law both were learning, first at classes at the Harbor Branch Oceanographic Institute in Florida and for years as their farmed clams grew in the creeks and bays around McClellanville. "It's been a long learning curve," Massey says. "The problem is you do something today, and you don't know how well it works for two years."

Massey, at 53, is considered one of the young guys in the profession. His son Jake, 23, has worked on boats and at the dock, but he plans to enter the U.S. Coast Guard soon. Livingston and Massey would love to pass on their institutional knowledge, and the business eventually, to Jake if he decides to return to McClellanville after a Coast Guard stint.

They don't think it would take long for Jake, or anyone else, to pick it up. The most important things they've learned through years are basic business principles – managing inventory, keeping customers happy, and dealing with changing regulations. "As long as you're willing to work hard and keep your eyes open, you can pick it up," Jeff Massey says. "It's not brain surgery."

NATIONAL ORGANIZATIONS STEP UP MENTORING EFFORTS

Of course, learning any job can be a challenge. And people who struggle to pick up the intricacies of a particular job often give up, even leaving the profession. Recognizing that retention problem, especially among women in oceanography, a group formed by the National Science Foundation and the Office of Naval Research decided in the early 2000s that the lack of effective mentoring was the one career

hurdle that could be most easily removed.

They established a program that connects women at the post-doctoral level with senior scientists for 2½ days of workshops and group discussions. It's intense mentoring, usually leading to months or years of emails and phone calls. Surveys up to five years after the workshops found 100 percent of respondents still working in oceanography.

In recent years, more professional organizations have begun stressing the need for such efforts. The National Marine Educators Association, for instance, offered two sessions on mentoring at its 2017 national conference in Charleston. The Coastal Society (TCS), a national organization dedicated to addressing coastal issues, has added formal career days in recent years and is formulating a new mentoring program to honor Margaret Davidson, former executive director of the S.C. Sea Grant Consortium who passed away in 2017.

Tom Bigford, a former TCS president who recently retired as policy director of the American Fisheries Society, says it is imperative for young scientists to find mentors early in their careers, when the work is intense and the financial rewards small.

"The competition is so keen in those years," Bigford says. "And they are wondering whether they made a great career choice. I find myself drumming up enthusiasm and bolstering optimism."

Davidson knew mentoring benefited participants and addressed coastal priorities, and she wove the passing down of knowledge and passion into her day-to-day job responsibilities. But how do we keep up the effort when such powerful mentors are no longer working in those jobs?

South Carolina has a luxury in this regard. The allure of coastal South Carolina tends to keep retirees around, and the passion that made them leaders in their fields also means they are willing to keep sharing their experience. Fred Holland still revels in



LAYING FOUNDATIONS. *The process of building a sustainable oyster reef is similar to successful career mentoring: Veterans need to provide potential substrate, like these shell pieces, to foster growth of newcomers in the field.*
PHOTO/GRACE BEAHM ALFORD

asking “So what?” Emory Campbell still tells stories that help others connect past and future. Sue Morrison still helps with a fifth-grade science program at Patriots Point in Mount Pleasant, where young teachers can pick her brain. SCDNR staffers laugh about how often Al Segars still drops by their coastal offices. Bill Livingston

and Rut Leland still feel a strong emotional connection to the McClellanville seafood docks that keeps them from retiring.

And the generations they helped learn the ropes are now sharing knowledge with a younger generation raring to make its mark. Catharine Parker, for instance, knows she’s not ready to

shoulder the burden of moving scientific research forward yet. But she is anxious to learn under the patient tutelage of Denise Sanger.

“So I may not feel prepared right now, but I have confidence that I will in the future,” Parker says. “I am definitely inspired to reach that level one day.” 🐦



Reading and Websites



ACE Basin National Estuarine Research Reserve.

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www.baruch.sc.edu

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International African American Museum.

www.iaamuseum.org

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Town of McClellanville.

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NEWS & NOTES

Consortium receives funding for Sea Grant activities

The National Sea Grant College Program awarded funding to the S.C. Sea Grant Consortium to support the first year of its research, extension, communications, and education efforts for 2018-2021. As part of this award, the following eight peer-reviewed research projects were selected for funding. More details will be posted on the Consortium's website at www.sc.seagrant.org/Research.

SUSTAINABLE COASTAL DEVELOPMENT AND ECONOMY

- *Socioeconomic evaluation of stormwater control measures to guide decision-making in coastal South Carolina.* Marzieh Motallebi and Daniel Hitchcock, Clemson University; Erik Smith, University of South Carolina; Susan Lovelace, S.C. Sea Grant Consortium. Researchers will analyze the costs and benefits of implementing various stormwater control measures, not just in terms of construction but over the span of their lifetimes. The goal is to help communities determine which stormwater control measures best fit their plans.

SUSTAINABLE FISHERIES AND AQUACULTURE

- *Examining the social carrying capacity for mariculture development in coastal South Carolina.* William Norman, Laura Duffy, Jeffrey Hallo, Laura Jodice, Clemson University. Research has indicated South Carolina residents and tourists support clam mariculture, but little research has been done on the acceptability of the more visible infrastructure of oyster mariculture in

the state's waterways. Researchers will survey coastal homeowners and waterway users about their views on the expanding industry.

- *Innovative fish aging methods for rapid detection of climate-driven changes in population demography.* Joseph Quattro, Michelle Passerotti, University of South Carolina, and Joseph Ballenger, S.C. Department of Natural Resources. Researchers will assess Near Infrared Spectroscopy and Aspartic Acid Racemization as methods to determine the age of fish ear bones and vertebrae. The ability to quickly detect changes in age and growth trajectories of fish is a key to successfully managing them. Current methods are time-consuming and make real-time management more challenging.

WEATHER AND CLIMATE RESILIENCE

- *Quantifying responses of salt marsh productivity to environmental variability over various time scales.* Thomas O'Halloran, Clemson University, and Erik Smith, University of South Carolina. Researchers will use a device called an eddy flux tower to measure the net ecosystem exchange of carbon dioxide in a marsh at half-hour periods. The goal is to determine the sensitivity and health of the marsh during times of increased water levels and high salinity. This will be important as researchers try to understand the impact of sea-level rise on marsh ecosystems.

HEALTHY COASTAL ECOSYSTEMS

- *Development of models for phytoplankton-nutrient responses in support of numeric nutrient criteria for estuarine water quality.* James Pinckney and Erik Smith, University of South Carolina. Increasing population and changing

agricultural practices have resulted in more nitrogen ending up in South Carolina estuaries and a general decline in water quality. This research is designed to develop models to quantify the response of the phytoplankton community in estuaries to increases and decreases in nitrogen.

- *Relating nonpoint source biochemical oxygen demand loading to land-use and stormwater-management practices in coastal South Carolina.* Erik Smith, University of South Carolina. The occurrence of low dissolved oxygen is the leading cause of water quality impairment in the coastal zone. This research will examine the biochemical oxygen demand in waters related to various stormwater control measures, with the goal of helping stormwater managers plan future practices.

- *Synthesis of long-term coastal monitoring datasets to identify and model relationships between land cover, coastal ecosystem change, and weather.* Andrew Tweel, Denise Sanger, and Sharleen Johnson, S.C. Department of Natural Resources. Researchers will quantify the relationships between land use and nearby water quality, then they will examine the impact of various climate and weather patterns on those relationships. The work is designed to help coastal planners and stormwater managers design best management practices moving forward.

- *Linking land use to changes in physical processes in creeks and estuaries: Implications for increased development and changes in climate and weather.* Andrew Tweel, Denise Sanger, and Stacie Crowe, S.C. Department of Natural Resources. Researchers will investigate how water quality following rain varies along the length of tidal creek systems in areas with various types and intensity of development.

NEWS & NOTES

The results can be utilized to improve land-use planning. ✓

Charleston Resilience Network brings stakeholders together

Two events in one day highlighted the multi-pronged approach of the Charleston Resilience Network (CRN) to educate stakeholders and enhance planning and preparation for episodic and chronic flooding events in the Charleston region.

A morning focus group session on March 1, 2018 at the College of Charleston's Riley Center for Livable Communities brought together more than 30 representatives from neighborhood groups, businesses, and local governments to discuss coastal resilience assessment and adaptation tools. The S.C. Sea Grant Consortium, on behalf of the CRN, has received a National Infrastructure Protection Plan Security and Resilience Challenge contract from the U.S. Department of Homeland Security to design tools for those targeted audiences.

The takeaway from the session was that each sector has distinct needs. Municipal governments want tools that can synthesize information across departments and distribute it efficiently and in a timely manner. Businesses prefer an array of choices that allows them to select the tools that work best for their varied requirements. Neighborhoods want simple tools that can be understood by a wide cross-section of the public. These and other comments provided by the participants will factor into

the approach the team will use to adapt and design tools tailored to the information needs of communities located throughout the Charleston region.

In the afternoon, nearly 50 coastal stakeholders gathered for the 2018 Charleston Resilience Network Expo at the Historic Rice Mill in Charleston. They strolled among, and talked with, exhibitors who have interests and programs related to coastal resilience preparation, response, and recovery.

The exhibitors included nonprofits that help conserve land and landscapes, engineering firms which design low-impact developments, private sector and academic institutions engaged in flood mapping, an ecosystem restoration company, an environmental justice organization, and Berkeley-Charleston-Dorchester Council of Governments public transit representatives.

The Expo was the latest in a series of CRN networking projects designed to connect and coordinate municipal, neighborhood, nonprofit, and business groups involved in flood planning and adaptation. These efforts are funded by a Regional Coastal Resilience Grant

from the National Oceanic and Atmospheric Administration awarded to the Consortium, on behalf of the CRN, to enhance the region's adaptive capacity. ✓

Oyster growers gather in Charleston to share experience

About 200 people with connections to the shellfish industry gathered in Charleston February 9-10, 2018 to discuss pressing issues and relevant research at the second Oyster South Symposium.

The crowd included oyster producers, gear suppliers, distributors, vendors, managers, researchers, and students. Presentation topics included the performance of triploid oysters, hurricane recovery, and product branding. Julie Davis, S.C. Sea Grant Consortium living marine resources specialist, led a discussion on disaster management.

Oyster South, a nonprofit created to encourage successful oyster farming in the region, held its first symposium in Auburn, Alabama in 2017. The National Sea Grant College Program provided financial assistance for the Charleston event.

Beth Walton, executive director of Oyster South, says the event was a huge success.

"We heard a lot of positive feedback about the presentations that were given, but also that everyone was excited to catch up with one another to compare notes on things," Walton said. "It also gives the farmers a chance to meet and talk with chefs and food writers, and vice versa. That face time with old and new friends is so important." ✓



Exhibitors shared information with about 50 local stakeholders during the Charleston Resilience Network Expo at the Historic Rice Mill in Charleston in early March. PHOTO/JOEY HOLLEMAN/S.C. SEA GRANT CONSORTIUM



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EBBS & FLOWS

National Working Waterfronts and Waterways Symposium

Grand Rapids, Michigan
May 14-17, 2018

The symposium, hosted by Michigan Sea Grant and the National Working Waterfront Network, is designed to showcase innovative solutions to a variety of waterfront issues. By also generating strategic partnerships, the event helps balance diverse uses, ensure access, and plan for the future of waterfronts. For more information, go to www.nationalworkingwaterfronts.com.

National Marine Educators Association Conference

Long Beach, California
July 15-20, 2018

Nearly 500 educators from high schools, nonprofit organizations, and government agencies come together to learn and share. Working around the theme "Charting a Course for Conservation," the conference covers topics that promote awareness and education about the global marine environment. Visit www.marine-ed.org/page/2018Conference for more information.

Carolinas Climate Resilience Conference

Columbia, South Carolina
September 17-19, 2018

Building resilience, the ability to adjust easily to or recover from a stress or change, is the focus. The conference provides a platform for researchers and staff from public agencies to share experiences, tools, resources, and expertise to foster real-world solutions for climate adaptation in the Carolinas. For more information, visit www.cisa.sc.edu/ccrc.

Subscriptions are free upon request by contacting: Joey.Holleman@scseagrant.org

ATTENTION SCHOOL TEACHERS! The S.C. Sea Grant Consortium has designed supplemental classroom resources for this and past issues of *Coastal Heritage* magazine. *Coastal Heritage Curriculum Connection*, written for K-12 educators and their students, is aligned with the South Carolina state standards for the appropriate grade levels. Includes standards-based inquiry questions to lead students through explorations of the topic discussed. *Curriculum Connection* is available online at www.scseagrant.org/education.

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